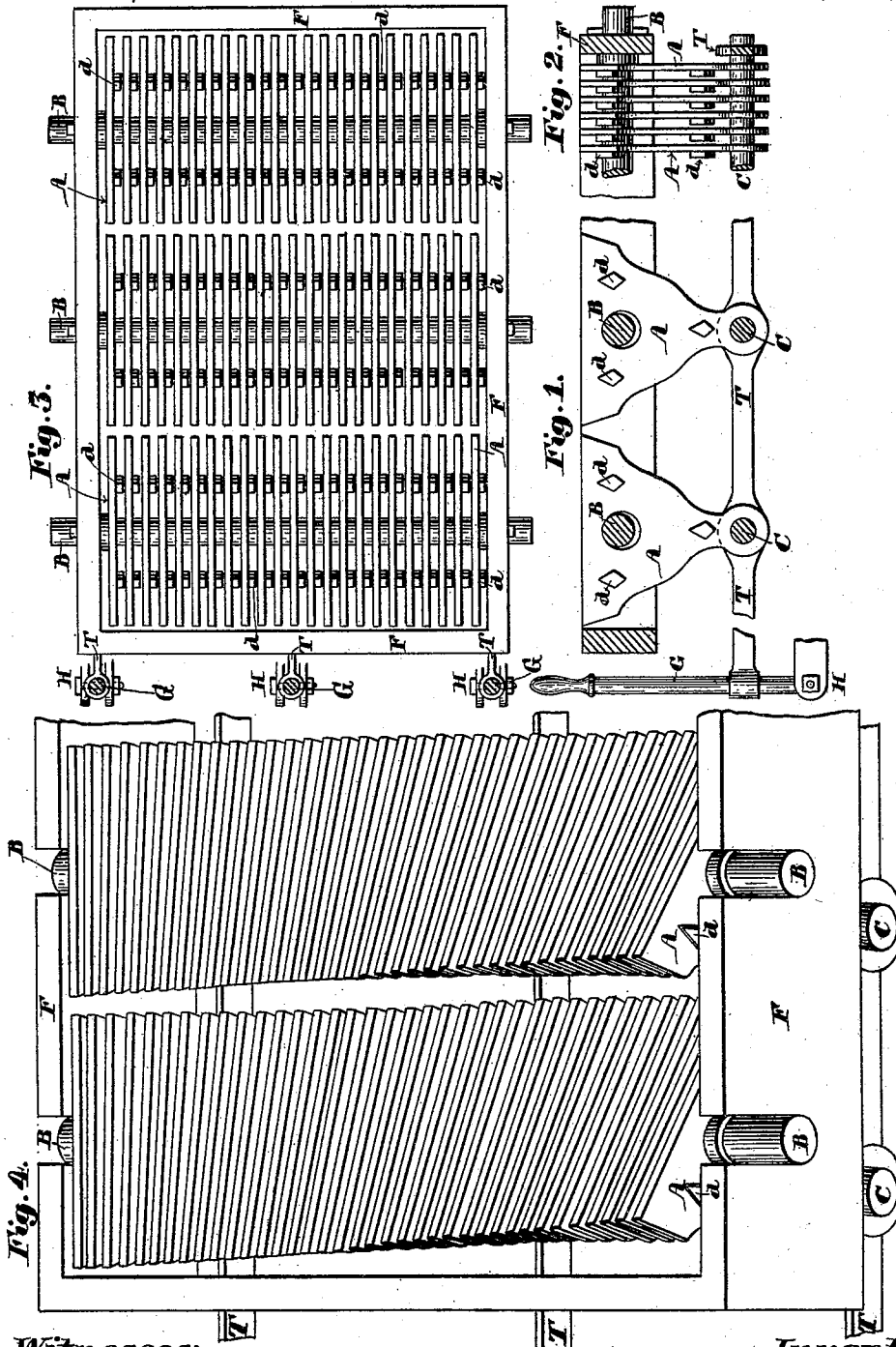


(No Model.)

G. DOWNING, Jr. & W. F. HALL.
ROCKER TOOTH GRATE.

No. 488,548.

Patented Dec. 27, 1892.



Witnesses:

Mark Dean,
F. W. Spencer

Inventors:

Geo. Downing Jr.
Wm F. Hall
Per A. Roberts,
Attorney.

UNITED STATES PATENT OFFICE.

GEORGE DOWNING, JR., AND WILLIAM F. HALL, OF LINCOLN, NEBRASKA;
SAID HALL ASSIGNOR TO THOMAS RYAN, OF SAME PLACE.

ROCKER-TOOTH GRATE.

SPECIFICATION forming part of Letters Patent No. 488,548, dated December 27, 1892.

Application filed September 16, 1890. Serial No. 364,947. (No model.)

To all whom it may concern:

Be it known that we, GEORGE DOWNING, Jr., and WILLIAM F. HALL, citizens of the United States, residing at Lincoln, in the county of Lancaster and State of Nebraska, have invented certain new and useful Improvements in Rocker-Tooth Grates; and we do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it pertains to make and use the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

Our invention relates to an improvement in grates for furnaces stoves &c and it consists in making the upper or fire surface of the grate of the upper ends of a series of movable sections or teeth that are hung loosely upon stationary rods and which may be made to oscillate or rock as hereinafter described so as to break up clinkers or shake down ashes.

In the accompanying drawings Figure 1 is a longitudinal section of a fragment of the grate, Fig. 2 is a partial cross-section of the same and Fig. 3 is a plan view while Fig. 4 shows a portion of the grate on a somewhat larger scale as it appears when one end is rocked while the other remains stationary.

Similar letters refer to like parts throughout.

Our improved grate consists of a frame in which are secured the supporting bars or rods B. B. On these bars are placed the separately movable sections A A, the upper ends of which form the fire surface of the grate. These movable sections A A are of cast iron and are made about three eighths of an inch in thickness with projecting points *d d* to keep them at proper distances apart. The lower ends of these sections are joined by the rods C. C, and these rods are connected by bars or links T. T. and extended to receive the levers G. G.

In large grates we provide for the use of three levers and connecting bars as shown at G. G. Fig. 3. The levers have each a fulcrum which may be secured to the furnace front. These levers may be operated independently of each other, each end lever by acting most upon the sections on that side of the grate will, when operated alone, cause the fire surface to assume the form of a spiral, or these end levers may be operated at the same time in opposite directions. When it is desired to shake the whole grate evenly the center lever is used, which is so connected as to accomplish that object.

By means of the devices named, clinkers can be broken up or ashes shaken down at one end of a grate while the other remains almost stationary, thus affording two points of advantage, one that the fire is not all disturbed at once, the other that greater force can be exerted at a given point to break up clinkers.

Various other forms of this grate have been devised suitable for stoves, house grates &c but all including the stationary bars with oscillating sections forming the fire surface.

Having thus fully described our invention we claim

In a grate, the combination of the stationary bars B, fuel supporting sections A, loosely strung thereon, bars C connecting the lower parts of said sections and operating means connected with both ends of said bars substantially as described.

In testimony that we claim the foregoing as our own we affix our signatures in the presence of two witnesses.

GEO. DOWNING, JR.
WM. F. HALL.

Witnesses:

A. ROBERTS,
E. S. RUNYAN.